

1645 **PATENT**

Attorney Docket No.: A-69566-2/RFT/RMS/RMK

463077-107

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Chirino, et al.

Serial No. 10/039,170

Filed: January 4, 2002

Protein Design Automation for For:

Designing Protein Libraries with

Altered Immunogenicity

Examiner: To be assigned

Group Art Unit: 1645

CERTIFICATE OF MAILING

TO THE TO TO THE I hereby certify that this correspondence, including listed enclosures, is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for

Patents, Washington, DC 20231 on:

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents Washington, DC 20231

Sir:

In satisfaction of the duty of disclosure under 37 C.F.R. § 1.56, and in accordance with the provisions of 37 C.F.R. §§ 1.97 and 1.98, Applicants wish to draw the attention of the U.S. Patent and Trademark Office to the references cited on the accompanying form PTO-1449. Copies of these references are attached.

As required by M.P.E.P. §2001.06(b), Applicants note that the present application is related to the following patent application:

Application Serial No.

Date Filed

09/903,378

July 10, 2001

(Published Aug. 29, 2002, as 02-0119492)

1098903 1

None of the foregoing references are believed to disclose the invention as claimed.

Nothing herein shall constitute an admission concerning the contents of any of the cited

references, nor shall the inclusion of a reference herein be considered an admission that the

reference constitutes prior art against the invention claimed in the above-identified application.

Submission of the present document shall not be construed as an admission that a search has

been made or that better art does not exist.

As far as is known to the undersigned, this Information Disclosure Statement is being

filed within three months of the filing date of a national application, within three months of the

date of entry of a national stage, or before the mailing date of a first Office Action on the merits

as set forth in 37 C.F.R. § 1.97(b), and therefore no fee is required. While no fee is believed to

be due, if this belief is in error, the Commissioner is authorized to charge any fees which may be

required or credit any overpayment to Deposit Account No. 50-2319 (Our Order No. 463077-

107/RFT/RMS/RMK (A-69566-2/RFT/RMS/RMK)).

Please direct any calls in connection with this application to the undersigned at (415)

781-1989.

Respectfully submitted,

DORSEY & WHITNEY LLP

Customer Number: 32940

Dorsey & Whitney LLP

Intellectual Property Department

Four Embarcadero Center, Suite 3400

San Francisco, CA 94111-4187

Telephone:

(415) 781-1989

Facsimile:

(415) 398-3249

Robin M. Silva, Reg. No. 38,304

Filed under 37 C.F.R. § 1.34(a)

1098903 1

Complete if Known

January 4, 2002

10/039,170

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Number

Filing Date

Substitute for form 1449A/PTO (Modified)

INFORMATION DISCLOSURE

(use a

Sheet

MENT BY APPLICANT	First Named Inventor	Arthur Chirino	
	Group Art Unit	1645	
as many sheets as necessary)	Examiner Name	To be assigned	

Attorney Docket Number A-69566-2/RFT/RMS/RMK

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No.	U.S. Patent Do Number-Kind Code		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
120	A1	4,939,666		07/1990	Hardman, K.D.	
	A2	5,241,470		08/1993	Lee, C., and S. Subbiah	7
	А3	5,527,681		06/1996	Holmes, C.P.	
	A4	6,037,135		03/2000	Kubo, R., et al.	St ~ In
	A5	6,188,965	B1	02/2001	Mayo, S.L., et al.	C II (i)
	A6	6,269,312	B1	07/2001	Mayo, S.L., et al.	100
	A7	6,403,312	B1	06/2002	Dahiyat, B.I., et al.	
	A8	01-0032052	A1	11/2001	Mayo, S.L., et al.	10 - I
	A9	01-0039480	A1	11/2001	Mayo, S.L., et al.	@ E M
	A10	02-0004706	A1	01/2002	Mayo, S.L., et al.	9 6
	A11	02-0048772	A1	04/2002	Dahiyat, B.I., et al.	EQ.
	A12	02-0090648	A1	07/2002	Dahiyat, B.I., et al.	8
	A13	02-0106694	A1	08/2002	Mayo, S.L., et al.	

			F	OREIGN PATENT	DOCUMENTS		
Examiner Initials*	Cite No.	Foreign Patent Docum Country Code ² Number ⁴ Kini known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
	B1	WO 95/05849 A	\ 1	03/1995	Mouritsen, S., and H. Elsner		
	B2	WO 95/22625 A	\1	08/1995	Stemmer, W., and A. Crameri		
	В3	WO 98/32845 A	\ 1	07/1998	Söderlind, U., et al.		
	B4	WO 98/47089 A	.1	10/1998	Mayo, S.L., et al.		
	B5	WO 98/52976 A	.1	11/1998	Carr, F.J.		
	В6	WO 99/11777 A	.1	03/1999	Carr, F.J., et al.		
	В7	WO 99/49893 A	.1	10/1999	Delisi, C., et al.		
	В8	WO 00/23564 A	2	04/2000	Fiebig, K., et al.		
	В9	WO 00/34317 A	2	06/2000	Carr, F.J., et al.		
	B10	WO 00/68396 A	.3	11/2000	Bentzien, J.		
	B11	WO 01/41788 A	.1	06/2001	Fikes, J., et al.		
	B12	WO 01/41799 A	.1	06/2001	Sette, A., et al.		
	B13	WO 01/42267 A	.1	06/2001	Fikes, J., et al.		
	B14	WO 01/42270 A	1	06/2001	Fikes, J., et al.		
	B15	WO 01/45728 A	2	06/2001	Fikes, J., et al.		

Examiner		Date	
Signature		Considered	
	, , , , , , , , , , , , , , , , , , , ,		the state of the s

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231, 1097418_1

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

hofer the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number,

Substitute for form 1449A/PTO (Modified)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

- ((use	as	many	sneets	as	necessary)	

2

Sheet

	Complete if Known	
Application Number	10/039,170	- CE
Filing Date	January 4, 2002	G.
First Named Inventor	Arthur Chirino	
Group Art Unit	1645	
Examiner Name	To be assigned	
Attorney Docket Number	A-69566-2/RFT/RMS/RMK	

	FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No.	Foreign Patent Country Code ² Numbe <i>known</i>	er⁴ Kind Code⁵ (if	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T⁵	
	B16	WO 01/59066	A3	08/2001	Dahiyat, B.I.			
	B17	EP 0273716	A3	12/1987	Berzofsky, J.A., et al.			
	B18	EP 0273716	B1	12/1987	Berzofsky, J.A., et al.			
	B19	EP 0279994	A2	12/1987 .	Berzofsky, J.A., et al.			

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	20 100
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	C1	Abrams, S.I., and J. Schlom, "Rational antigen modification as a strategy to upregulate or downregulate antigen recognition," Curr Opin Immunol. 2000 Feb;12(1):85-91.	
	C2	Altuvia, Y., et al., "A structure-based algorithm to predict potential binding peptides to MHC molecules with hydrophobic binding pockets," Hum Immunol. 1997 Nov;58(1):1-11.	
	СЗ	Borman, S., "Proteins to Order," Chemical and Engineering Newsletter (C&EN) Oct. 6, 1997, 9-10 (1997).	
	C4	Bowie, J.U., et al., "Deciphering the Message in Protein Sequences: Tolerance to Amino Acid Substitutions", Science vol.247:1306-1310 (Mar. 1990).	-
	C5	Bowie, J.U., et al., "A method to identify protein sequences that fold into a known three-dimensional structure," Science. 1991 Jul 12;253(5016):164-70.	
	C6	Brenner, S.E., and A. Berry, "A quantitative methodology for the de novo design of proteins", Protein Sci. 3:1871-1882 (Oct. 1994).	
-	C7	Brooks, B.R., et al., "CHARMM: A Program for Macromolecular Energy, Minimization, and Dynamics Calculations," J. of Computational Chemistry, 4(2):187-217 (1983).	
	C8	Brusic, V. et al., "MHCPEP, a database of MHC-binding peptides: update 1997," Nucleic Acids Res. 1998 Jan 1;26(1):368-71.	
	C9	Brusic, V., et al., "Prediction of MHC class II-binding peptides using an evolutionary algorithm and artificial neural network," Bioinformatics. 1998;14(2):121-30.	
	C10	Buus, S., "Description and prediction of peptide-MHC binding: the 'human MHC project'." Curr Opin Immunol. 1999 Apr;11(2):209-13.	
	C11	Connolly, M.L., "Solvent-Accessible Surfaces of Proteins and Nucleic Acids", Science vol.221(4612):709-713 (Aug. 1983).	
	C12	Cornell, W.D., et al., "A Second Generation Force Field for the Simulation of Proteins, Nucleic Acids, and Organic Molecules," J. Am. Chem. Soc., 117:5179-5197 (1995).	
	C13	Dahiyat, B.I., et al., "Protein design automation," Caltech Biology Annual Report, 172 (1995).	
	C14	Dahiyat, B.I., et al., "Protein Design Automation," Meeting Abstract; Protein Science vol. 4, Suppl. 2, 83 (1995).	
	C15	Dahiyat, B.I., et al., "Protein design Automation," Poster Sessions, Protein Science vol.5, Suppl. 1, 2223 (1996).	

Company of the Compan	
Examiner	Date
Signature	Considered

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231. 1097418_1

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control and ber.

Substitute for form 1449A/PTO (Modified)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

6

Sheet

	Complete if Known	不
Application Number	10/039,170	40
Filing Date	January 4, 2002	2.5
First Named Inventor	Arthur Chirino	0
Group Art Unit	1645	200
Examiner Name	To be assigned	8 8
Attorney Docket Number	A-69566-2/RFT/RMS/RMK	Ro

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	C16	Dahiyat, B.I., and S.L. Mayo, "Protein design automation," Protein Sci. 1996 May;5(5):895-903	
	C17	Dahiyat, B.I., et al., "Probing the Role of Specificity in Protein Design," Caltech Biology Annual Report, 160-161 (1996).	
	C18	Dahiyat, B.I., and S.L. Mayo, "De novo protein design: fully automated sequence selection," Science. 1997 Oct 3;278(5335):82-7	
	C19	Dahiyat, B.I., et al., "Automated design of the surface positions of protein helices", Protein Science 6:1333-1337 (Jun. 1997).	
3:	C20	Dahiyat, B.I., et al., "First fully automatic design of a protein achieved by Caltech scientists", new press release (Oct. 1997).	
	C21	Dalal, S., et al., "Protein alchemy: Changing β-sheet into α-helix", Nature Struc. Biol. vol.4(7):548-552 (Jul. 1997).	
	C22	DeGrado, W., "Proteins from Scratch," Science, 278:80-81 (1997).	
	C23	Desjarlais, J.R., and T.M. Handel, "De novo design of the hydrophobic cores of proteins," Protein Sci. 1995 Oct;4(10):2006-18.	
	C24	Desjarlais, J.R., and T.M. Handel, "New strategies in protein design," Current Opinion in Biotechnology :460-466 (1995).	
	C25	Desmet, J., et al., "The dead-end elimination theorem and its use in protein side-chain positioning", Nature vol.356:539-542 (Apr. 1992).	
	C26	Desmet, J., et al., "The 'Dead End Elimination' Theorem: A New Approach to the Side Chain Packing Protein", from "The Protein Folding Problem and Tertiary Structure Prediction" Ch.10:1-49 (1994).	
	C27	Desmet, J., et al., "Theoretical and Algorithmical Optimization of the Dead-End Elimination Theorem," Proceedings of the Pacific Symposium on Biocomputing '97, 122-133 (1997).	
	C28	Dunbrack Jr., R.L., and M. Karplus, "Conformational analysis of the backbone-dependent rotamer preferences of protein sidechains", Struc. Biol. vol.1(5):334-340 (May 1994).	
	C29	Eisenberg, D., and A. McLachlan, "Solvation energy in protein folding and binding", Nature vol.319:199-203 (Jan. 1986).	
	C30	Gallop, M.A., et al., "Applications of Combintorial Technologies to Drug Discovery. 1. Background and Peptide Combinatorial Libraries," Journal of Medicinal Chemistry Vol. 37, No. 9 (April 29, 1994), 1233-1251.	
	C31	Goldstein, R.F., "Efficient Rotamer Elimination Applied to Protein Side-Chains and Related Spin Glasses", Biophys. Jour. vol.66:1335-1340 (May 1994).	
	C32	Gordon, D.B., et al. "Energy functions for protein design," Curr. Opinion in Struct. Biol., 9:509-513 (1999).	
	C33	Gulukota, K., et al., "Two complementary methods for predicting peptides binding major histocompatibility complex molecules," J Mol Biol. 1997 Apr 18;267(5):1258-67.	
	C34	Hammer, J., et al., "Rules governing peptide-class II MHC molecule interactions." Behring Inst Mitt. 1994 Jul;(94):124-32.	
	C35	Hammer, J., et al., "Precise prediction of major histocompatibility complex class II-peptide interaction based on peptide side chain scanning," J Exp Med. 1994 Dec 1;180(6):2353-8.	
	C36	Hammer, J., "New methods to predict MHC-binding sequences within protein antigens." Curr Opin Immunol. 1995 Apr;7(2):263-9.	

Examiner		Date	
Signature	·	Considered	
Oignature	·		

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231. 1097418_1

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Sheet

Substitute for form 1449A/PTO			Complete if Known	1		
	(Modified)		Application Number	10/039,170	5	
			CLOSURE	Filing Date	January 4, 2002	I
STATEMENT BY APPLICANT			PLICANT	First Named Inventor	Arthur Chirino	19
				Group Art Unit	1645	, 0
	(use as many sh	ieets as nec	essary)	Examiner Name	To be assigned	3
eet	4	of	6	Attorney Docket Number	A-69566-2/RFT/RMS/RMK	急

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	0
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T⁵
	C37	Harbury, P.B., et al., "Repacking protein cores with backbone freedom: structure prediction for coiled coils," Proc Natl Acad Sci U S A. 1995 Aug 29;92(18):8408-12.	
	C38	Harbury, P.B., et al., "High-Resolution Protein Design with Backbone Freedom," Science, 282:1462-1467 (1998).	
	C39	Hellinga, H.W., and F.M. Richards, "Construction of New Ligand Binding Site in Proteins of Known Structure", J. Mol. Biol. 222:763-785 (1991).	
	C40	Hellinga, H.W., and F.M. Richards, "Optimal sequence selection in proteins of known structure by simulated evolution," Proc Natl Acad Sci U S A. 1994 Jun 21;91(13):5803-7.	
	C41	Hellinga, H.W., "Rational protein design: Combining theory and experiment", Proc. Natl. Acad. Sci, USA vol.94:10015-10017 (Sep. 1997).	
	C42	Hemmer, B., et al., "Predictable TCR antigen recognition based on peptide scans leads to the identification of agonist ligands with no sequence homology." J Immunol. 1998 Apr 15;160(8):3631-6.	
	C43	Hemmer, B., et al., "Contribution of individual amino acids within MHC molecule or antigenic peptide to TCR ligand potency," J Immunol. 2000 Jan 15;164(2):861-71.	
	C44	Hiemstra, H.S., et al., "Antigen arrays in T cell immunology." Curr Opin Immunol. 2000 Feb;12(1):80-4.	
	C45	Holmes, B., "First-ever designer protein fits like a glove," New Scientist, IPC Magazines Limited, 8 Oct. 11 (1997).	
	C46	Hurley, J., et al., "Design and Structural Analysis of Alternative Hydrophobic Core Packing Arrangements in Bacteriophage T4 Lysozyme," J. Mol. Biol., 224:1143-1159(1992).	
	C47	Jones, D.T., "De novo protein design using pairwise potentials and a genetic algorithm," Protein Sci. 1994 Apr;3(4):567-74.	
	C48	Koehl, P., and M. Levitt, "De Novo Protein Design. I. In Search of Stability and Specificity," J. Mol. Biol., 293:1161-1181 (1999).	
	C49	Kono, H., and J. Doi, "Energy minimization method using automata network for sequence and side-chain conformation prediction from given backbone geometry," Proteins. 1994 Jul;19(3):244-55.	
	C50	Kortemme, T., et al., "Design of a 20-Amino Acid, Three-Stranded β-Sheet Protein," Science, 281:253-256 (1988).	
,	C51	Lam, K.S., "Application of Combinatorial Library Methods in Cancer Research and Drug Discovery," Anti-Cancer Drug Design (1997), 12, 145-167.	
	C52	Laroche, Y., et al., "Recombinant staphylokinase variants with reduced antigenicity due to elimination of B-lymphocyte epitopes," Blood. 2000 Aug. 15;96(4):1425-39.	
	C53	Lasters, I., et al., "Enhanced dead-end elimination in the search for the global minimum energy conformation of a collection of protein side chains," 1995, Protein Engineering, vol. 8, No. 8, pp. 815-822.	
	C54	Lasters, I., et al., "Dead-End Based Modeling Tools to Explore the Sequence Space That is Compatible with a Given Scaffold", Jour. of Protein Chem. vol.16(5):449-452 (Jul. 1997).	
	C55	Lazar, G., et al., "De novo design of the hydrophobic core of ubiquitin," Protein Science 6:1167-1178 (1997).	
	C56	Lee, C. and M. Levitt, "Accurate prediction of the stability and activity effects of site-directed mutagenesis on a protein core," Nature, 352:448-451 (1991).	
	C57	Lim, W.A., et al., "The crystal structure of a mutant protein with altered but improved hydrophobic core packing," Proc Natl Acad Sci U S A. 1994 Jan 4;91(1):423-7	

Examiner		Date	
Signature	· ·	Considered	
	L		

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231. 1097418_1

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here is entirested to take a Standard ST. ⁸ Company of the patent of the paten

Approved for use through 10/31/2002. OMB 0651-0031 U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Inder the Paperwork Reduction Act of 1995, no persons are required to res

Substitute for form 1449A/PTO (Modified)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

6

Sheet

4,14.2	Complete if Known	
Application Number	10/039,170	~~ =
Filing Date	January 4, 2002	Trong .
First Named Inventor	Arthur Chirino	ST 4
Group Art Unit	1645	Ch 12
Examiner Name	To be assigned	
Attorney Docket Number	A-69566-2/RFT/RMS/RMK	

10 70 10 10		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	35
CHARLES & CONTRACTOR		THE COLUMN TWO IS NOT	$\stackrel{\varnothing}{=}$
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	7
	C58	Madden, D.R., "The three-dimensional structure of peptide-MHC complexes." Annu Rev Immunol. 1995;13:587-622.	
· · ·	C59	Mallios, R.R., "Iterative stepwise discriminant analysis: a meta-algorithm for detecting quantitative sequence motifs." J Comput Biol. 1998 Winter;5(4):703-11.	
	C60	Mallios, R.R., "Class II MHC quantitative binding motifs derived from a large molecular database with a versatile iterative stepwise discriminant analysis meta-algorithm," Bioinformatics. 1999 Jun;15(6):432-9.	
	C61	Mayo, S., et al., "DREIDING: A Generic Force Field for Molecular Simulations," J. Phys. Chem., 94:8897-8909 (1990).	
	C62	Meister, G.E., et al., "Two novel T cell epitope prediction algorithms based on MHC-binding motifs; comparison of predicted and published epitopes from Mycobacterium tuberculosis and HIV protein sequences." Vaccine. 1995 Apr;13(6):581-91.	
	C63	Meyer, D.L., et al., "Reduced antibody response to streptavidin through site-directed mutagenesis." Protein Sci. 2001 Mar;10(3):491-503.	
	C64	Minor Jr., D.L., and P. Kim, "Measurement of the β-sheet-forming propensities of amino acids", Nature vol.367:660-663 (Feb. 1994).	T
	C65	Munoz, V., and L. Serrano, "Intrinsic Secondary Structure Propensities of the Amino Acids, Using Statistical phi-psi Matrices: Comparison with Experimental Scales", Proteins 20:301-311 (1994).	
	C66	Munoz, V., and L. Serrano, "Helix design, prediction and stability", Curr. Opin. in Biotech. 6:382-386 (Aug. 1995).	Τ
	C67	Munoz, V., et al., "Analysis of the effect of local interactions on protein stability", Folding & Design 1(3):167-178 (Apr. 1996).	
	C68	Novak, E.J., et al., "Tetramer-guided epitope mapping: rapid identification and characterization of immunodominant CD4+ T cell epitopes from complex antigens," J Immunol. 2001 Jun 1;166(11):6665-70.	
	C69	Pabo, C., "Designing proteins and peptides", Nature vol.301:200 (Jan. 1983).	
	C70	Padmanabhan, S., et al., "Relative helix-forming tendencies of nonpolar amino acids", Nature vol.344:268-270 (Mar. 1990).	
	C71	Parker, K.C., et al., "Scheme for ranking potential HLA-A2 binding peptides based on independent binding of individual peptide side-chains," J Immunol. 1994 Jan 1;152(1):163-75.	T
	C72	Paul, W.E., ed., <u>Fundamental Immunology</u> , Lippincott-Raven, 4 th ed., 1999, ch. 3 (pp. 37-74).	Γ
	C73	Paul, W.E., ed., Fundamental Immunology, Lippincott-Raven, 4 th ed., 1999, ch. 8 (pp. 263-285)	T
	C74	Paul, W.E., ed., Fundamental Immunology, Lippincott-Raven, 4 th ed., 1999, ch. 11 (pp. 367-409).	
	C75	Ponder, J.W., et al., "Use of Packing Criteria in the Enumeration of Allowed Sequences for Different Structural Classes", release by Acad. Press Inc. (London) Ltd. pp.775-791(1987).	
	C76	Raddrizzani, L., and J. Hammer, "Epitope scanning using virtual matrix-based algorithms," Brief Bioinform. 2000 May;1(2):179-89.	
	C77	Rammensee, H., et al., "SYFPEITHI: database for MHC ligands and peptide motifs," Immunogenetics. 1999 Nov:50(3-4):213-9.	Ī

CHARGE TYPE CARLES OF THE CHARGE THE CHARGE THE COLUMN TWO IN COLUMN TO THE CHARGE THE C	
Examiner	Date
Signature	Considered

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WiPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WiPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231. 1097418_1

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO (Modified)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

	Complete if Known		
10/039,170	TO V		
January 4, 2002	CO THE		
Arthur Chirino	The state of the s		
1645	TIPE :		
To be assigned	<u></u>		
A-69566-2/RFT/RMS/RMK			
	January 4, 2002 Arthur Chirino 1645 To be assigned		

	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Τ ⁶			
	C78	Rappe, A.K., and W.A. Goddard III, "Charge Equilibration for Molecular Dynamics Simulations," J. Phys. Chem., 95:3358-3363 (1991).				
	C79	Regan, L., "Helix is a helix?" Proc. Natl. Acad. Sci. USA vol.94:2796-2797 (Apr. 1997).				
	C80	Rudensky, A., et al., "Sequence analysis of peptides bound to MHC class II molecules." Nature. 1991 Oct 17,353(6345):622-7.				
	C81	Savoie, C.J., et al., "Use of BONSAI decision trees for the identification of potential MHC class I peptide epitope motifs." Pac Symp Biocomput. 1999:182-9.				
	C82	Shastri, N., "Needles in haystacks: identifying specific peptide antigens for T cells." Curr Opin Immunol. 1996 Apr;8(2):271-7.				
	C83	Smith, C.K., and L. Regan, "Guidelines for Protein Design: The Energetics of β-Sheet Side Chain Interactions", Science vol.270:980-982 (Nov. 1995).				
	C84	Stickle, D.F., et al., "Hydrogen Bonding in Globular Proteins," (1992) Journal of Molecular Biology, vol.226, pp. 1143-1159.				
	C85	Sturniolo, T., et al., "Generation of tissue-specific and promiscuous HLA ligand databases using DNA microarrays and virtual HLA class II matrices," Nat Biotechnol. 1999 Jun;17(6):555-61.				
	C86	Sun, S., et al., "Designing amino acid sequences to fold with good hydrophobic cores", Protein Eng. vol.8(12):1205-1213 (1995).				
	C87	Tsutsumi, Y., et al., "Site-specific chemical modification with polyethylene glycol of recombinant immunotoxin anti- Tac(Fv)-PE38 (LMB-2) improves antitumor activity and reduces animal toxicity and immunogenicity," Proc Natl. Acad Sci USA, 2000 Jul 18;97(15):8548-53.				
	C88	Tuffery, P., et al., "A New Approach to the Rapid Determination of Protein Side Chain Conformations," J. of Biomolecular Struct. & Dynamics, 8(6):1267-1289 (1991).				
	C89	Udaka, K., et al., "Decrypting the structure of major histocompatibility complex class I-restricted cytotoxic T lymphocyte epitopes with complex peptide libraries." J Exp Med. 1995 Jun 1;181(6):2097-108.				
	C90	van Gunsteren, W.F., and A. Mark, "Prediction of the Activity and Stability Effects of Site-directed Mutagenesis on a Protein Core," J. Mol. Biol., 227:389-395 (1992).				
	C91	Villegas, V., et al., "Stabilization of proteins by rational design of α-helix stability using helix/coil transition theory," Folding & Design, 1(1):29-34 (1995).				
	C92	Wesson, L., and D. Eisenberg, "Atomic solvation parameters applied to molecular dynamics of proteins in solution," Protein Science, 1:227-235 (1992).				
	C93	Wilson, C., et al. "Computational Method for the Design of Enzymes with Altered Substrate Specificity," J. Mol. Biol. (1991) 220,495-506.				
	C94	Wodak, S.J., and J. Janin, "Analytical approximation to the accessible surface area of proteins", Proc. Natl. Acad. Sci. USA vol.77(4):1736-1740 (Apr. 1980).				
	C95	- 5 16*				
-	C96					
	C97	·				

CHARLEST THE CO. LANSING SERVICE	
Examiner	_ Date
Signature	Considered

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231. 1097418_1